

INPO

Institute of Nuclear Power Operations

Nuclear Fuel Storage in the United States

Randy Tropasso

INPO Special Projects

Background

- 1980's – Symptom-based upgrades made to emergency procedures in response to Three Mile Island accident
- 1990's – Severe Accident Mitigation Guidelines (SAMG) implemented in response to Chernobyl accident
- 2000's – Extensive Damage Mitigating Guidelines (EDMG) implemented for mitigation of beyond-design-basis events in response to security related threats
- 2012 – Fukushima event initiatives...



INPO Event Report 11-1

Fuel Damage Caused By Earthquake and Tsunami

Verify each station can respond effectively to both design-basis and beyond-design-basis events:

1. Verify capability to mitigate beyond-design-basis events
2. Verify capability to mitigate station blackout event
3. Verify capability to mitigate internal/external flooding
4. Verify capability to mitigate fire/flood events during a seismic event

IER 11-1

How We Responded:

Issued supplement to IER 11-1 to:

- Ensure program control, ownership, and oversight of beyond-design-basis commitments
- Add commitments to site configuration control process , PM program and training program
- Periodically verify commitments are still in place and are executable
- Stage equipment properly (Flood/Wind/Seismic protection)



INPO Event Report 11-2

Spent Fuel Pool Loss of Cooling and Makeup

Increase sensitivity to spent fuel storage event response:

1. Verify SOER 09-1 actions are applied to SFP
2. Increase SFP protection during high heat loads
3. Provide time-to-saturation data to ER staff
4. Address SFP loss of cooling/makeup in AOPs
5. Address SFP level/temperature monitoring in EOPs

IER 11-2

How We Responded

- Assure response to SOER 09-1 addresses SFP protection with same rigor as core protection
- Assure time-to boil data is available to all Emergency Response personnel
- Assure site AOP/EOP's specifically address SFP loss of cooling, loss of inventory, and diverse monitoring capability

INPO Event Report 11-4

Near-Term Actions to Address Extended Loss of All AC Power

Develop preplanned contingencies for extended AC loss :

1. Methods to maintain core cooling, containment integrity, and SFP inventory
2. Methods to maintain essential instrumentation needed for monitoring core, containment, and SF safety
3. Methods to provide fuel to power emergency equipment
4. Provide suitable on/off site communications equipment



IER 11-4

How We Responded:

- Strategies such as use of portable generators, enhanced load shedding, use of N2 to operate vents
- Modifications such as low-leakage RCP seals, dedicated distribution centers, LED lighting, increased battery capacity
- Purchased equipment such as portable battery carts, sound powered phones, fire trucks, diesel-powered generators/pumps, ventilation equipment

**Ahead of us is the opportunity
... to improve the industry we have
... and shape the industry we want**

James Ellis, INPO President and CEO

November 2011, Fukushima Forum

